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ABSTRACT

In the second half of a two-part study conducted by the Illinois Community College System, a fall 1990 cohort of first-time freshmen was examined for 6 years to determine the effectiveness of remedial/developmental instruction. Student characteristics of age, ethnicity, and gender for the entire cohort were compared with the cohort group of students who enrolled in remedial/developmental courses and the group who did not. Students who did not enroll in remedial/developmental courses earned slightly higher grade point averages and slightly higher rates of credit hours than remedial students. However, remedial students had slightly higher persistence rates. The study also found that the more remedial/developmental courses a student enrolled in, the lower the completion rate. Math remediation was generally in highest need, and minority students required more language instruction than white students. Though all three groups--the entire cohort, the remedial students, and the non-remedial students--represented males and females similarly, recent high school graduates and minorities were overrepresented among the remedial student group. Appendix consists of implementation strategies. (YKH)

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# Remedial/Developmental Education in the Illinois Community College System

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# REMEDIAL/DEVELOPMENTAL EDUCATION IN THE ILLINOIS COMMUNITY COLLEGE SYSTEM

## Introduction

This report is the second of a two-part study of remedial/developmental education in the Illinois public community college system. Part one of the study examined the scope, cost, and structure of remedial/developmental education in the Illinois Community College System. This report will examine the results of remedial/developmental education for a selected cohort of first-time freshmen over a six-year period. Sources of information used for the two-part study include a survey conducted by the Illinois Community College Board (ICCB) and data contained in ICCB administrative databases.

The National Center for Educational Statistics (NCES) has defined remedial/developmental education as, "courses in reading, writing, or mathematics for college students lacking those skills necessary to perform college-level work at the level required by the institution" (NCES, 1996, p. 2). As a result of action by the Illinois General Assembly in 1979 (P.A. 81-803) and Board of Higher Education policies on undergraduate education (1986), community colleges have been designated as the primary providers of remedial/developmental education in the state. Accordingly, community colleges offer comprehensive remedial/developmental coursework that is designed to help students improve their basic academic skills when test results reveal that they are performing below the expected college-level in reading, mathematics, or writing/English.

## Scope of Remedial/Developmental Education in the Nation and in Illinois

Part one of the ICCB study was presented to the Illinois Community College Board at its October 17, 1997 meeting. The first part of the study provided contextual information regarding the scope of remedial/developmental education within higher education nationally and in Illinois. Nationally, three out of four colleges and universities that participated in a recent NCES survey reported offering remedial/developmental education. In addition, it was reported that nearly three of every ten first-time freshmen require remediation in at least one basic skill area. Among community colleges nationally, the statistics are even higher. Four of every ten first-time freshmen are underprepared in at least one basic skill area (NCES, 1996).

A recent study entitled, *The Scope and Effectiveness of Remedial/Developmental Education in Illinois Public Universities and Community Colleges* (September 1997), was jointly prepared by the Illinois Board of Higher Education (IBHE) and the Illinois Community College Board. The study revealed that in Illinois during fiscal year 1996, approximately 83,000, or 14.1 percent, of community college students enrolled in at least one remedial/developmental course. For public universities, nearly 11,300 students, or 6.9 percent, enrolled in remedial/developmental coursework during the same time period. Community college students accounted for 88 percent of the students who enrolled in remedial coursework at a public institution of higher education during fiscal year 1996, underscoring the colleges' primary role in providing remedial/developmental instruction in response to their open door admission policies, as well as state policies.

Part One of the current ICCB study further analyzed remedial coursetakers by student characteristics and course-taking behavior to determine the type and/or level of remediation students required, as well as whether differences were evident by age, ethnicity, or gender. Data from fiscal year 1991 and fiscal year 1996 were used in the analysis to provide information about any significant changes over time. Findings of the study included:

- The majority of remedial/developmental instruction was in mathematics for both years. However, the number of students enrolled in at least one remedial/developmental mathematics course increased approximately 70 percent between fiscal year 1991 and fiscal year 1996. The reclassification of intermediate algebra and geometry from college-level to remedial/developmental in fall 1993 is thought to be responsible for most of the increase in enrollment in mathematics. Overall, 7.0 percent of all collegiate-level students were enrolled in at least one remedial/developmental mathematics course in fiscal year 1991, compared to 11.3 percent in fiscal year 1996.

- Writing (communications) was the second most common area of remediation for students in both fiscal years studied, although the number of students enrolling in remedial/developmental coursework in this area was considerably smaller than in mathematics. Reading was the area in which the fewest students required remediation for both years. In addition, the number of students enrolled in remedial/developmental coursework in either writing or reading decreased approximately 18 percent from fiscal year 1991 to fiscal year 1996.

- The majority of students in both fiscal years studied required remediation in only one academic area -- 66.8 percent in fiscal year 1991 and 73.1 percent in fiscal year 1996.

- When remedial/developmental coursetakers were analyzed by age and course-taking behavior, younger students were more likely to be enrolled in one or more remedial/developmental courses. In addition, recent high school graduates were the most likely to require remediation in multiple subject areas.

- For both years of the study, minority students were overrepresented among remedial/developmental coursetakers, except for Hispanic students in fiscal year 1996. Minority students were also more likely to enroll in remedial/developmental courses in more than one subject area than white students.

## Cost of Remedial/Developmental Education in Illinois

In fiscal year 1996, public colleges and universities spent slightly more than $26.8 million in direct faculty salaries for remedial education, according to the jointly developed IBHE and ICCB report. Community colleges accounted for 87.2 percent of that total. Slightly more than $23.4 million, or 6.5 percent of direct faculty salary expenditures, was dedicated to remedial/developmental instruction in the community college system. By comparison, public universities spent $3.4 million, or about 1.1 percent, of total expenditures for direct salary costs, for remedial/developmental coursework. When the cost of remedial/developmental instruction in community colleges was examined over time, the cost as measured by direct faculty salary expenditure increased both in dollar amount and as a percent of the total from $14.6 million, or 5.1 percent of total direct faculty

salary expenditures, in fiscal year 1991, to $23.4 million, or 6.5 percent of the total, in fiscal year 1996. When other support services, equipment, and fixed costs are considered, the direct faculty salaries are about one-third of the total costs for remedial/developmental instruction.

## Outcomes of Remedial/Developmental Education

While the number of community college students involved in remedial/developmental instruction and the cost of providing that instruction are relatively small in comparison to the total, the numbers in and of themselves (83,000 students; $23.4 million in fiscal year 1996) are significant enough to warrant further study regarding the effectiveness of the instruction provided as measured by student academic performance. This report, part two of the ICCB study of remedial/developmental education, is designed to examine the outcomes of remedial/developmental education for community college students.

Results of Previous National, State, and College Studies. The research literature provides evidence that the type and/or level of remediation students require can be used to identify those most seriously at academic risk. For example, reading is a foundational skill needed for success in almost all other courses. Adelman (1996) notes that reading deficiencies often signal comprehensive literacy problems. Additionally, national and state studies, like the one conducted by the Maryland Higher Education Commission (1996), have shown that the greater the amount of remediation required by students, the lower their success rate in terms of retention, graduation, and transfer. Adelman found that students who took three or more remedial/developmental courses had the lowest degree completion rates of any group of students. These studies suggest that students who enroll in remedial/developmental reading courses and students who enroll in remedial/developmental courses in three subject areas are likely to be at the greatest academic risk of all students who require remediation. The cohort analysis that follows takes these findings into consideration.

Results of the Illinois Community College Board Cohort Study. A fall 1990 cohort of entering community college students was examined over a period of six years to determine the educational outcomes for those students and to give some indication of the effectiveness of remedial instruction. As in Part One of the study, students classified in Adult Basic, Adult Secondary, and English as a Second Language programs were excluded from the cohort, since those programs are targeted programs that do not serve the general student population. The following paragraphs describe the cohort, examine the cohort's educational attainments, and compare outcomes for students who enrolled in remedial/developmental coursework with students who did not. In addition, the type and level of remediation required are examined to determine if outcomes are different for students depending on the number of remedial/developmental courses they take and/or the subject areas in which remediation is required. Student characteristics of age, gender, and ethnicity are also considered in relation to educational outcomes for the cohort.

Description of the Cohort, Including Student Characteristics. The cohort studied included 85,371 students who were first-time freshman enrollees in an Illinois community college in fall 1990. Of these, 22,650 students (26.5 percent of the cohort) enrolled in one or more remedial/developmental course during the period of the study. A description of student characteristics for the entire cohort, remedial/developmental coursetakers, and those who did not enroll in remedial/developmental courses follows.

**Age**. Figure 1 illustrates the age profile for the entire cohort compared to the students within the cohort who enrolled in remedial/developmental coursework and the group of students who attempted no remedial/developmental courses.

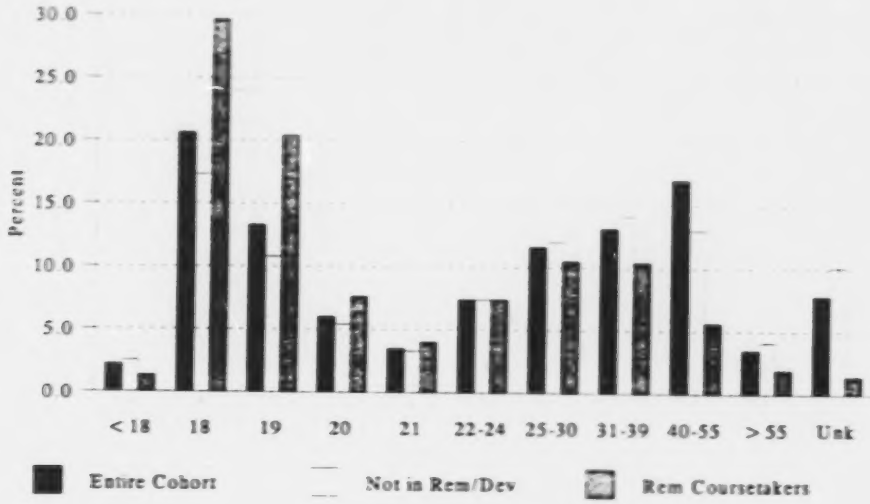


**Figure 1**. Age Profile

Recent high school graduates are overrepresented in the group of remedial/developmental coursetakers, as compared to the entire cohort and to the group of students who did not enroll in remedial/developmental courses. Half (50.0 percent) of the students who enrolled in one or more remedial/developmental course were 18 or 19 years old. When 20- and 21-year-olds, who can also be considered recent high school graduates, are added, the group accounts for 61.6 percent of all remedial/developmental coursetakers. In comparison, students in the 18-21 year-old age range account for 43.4 percent of the entire cohort, and only 36.8 percent of the students who did not enroll in remedial/developmental courses. Even though recent high school graduates are overrepresented in the group of remedial/developmental coursetakers, it should be noted that nearly 40 percent of the students who sought remediation were not recent high school graduates, contrary to the popular belief that the need for remedial instruction is a problem only for younger students. As noted in part one of this study, the wide range of students who require remediation presents a challenge to the colleges. Adult students' learning styles and academic support needs are often different from younger students. Additionally, the need for remediation can be different for older students whose academic skills may just be "rusty," than for recent high school graduates who have not yet obtained those skills.

**Ethnicity**. Figures 2a, b, and c illustrate the ethnic composition for the entire cohort compared to remedial/developmental coursetakers and the group of students who did not enroll in remedial/developmental courses. The "Other" category includes American-Indian, nonresident alien, and unknown designations.

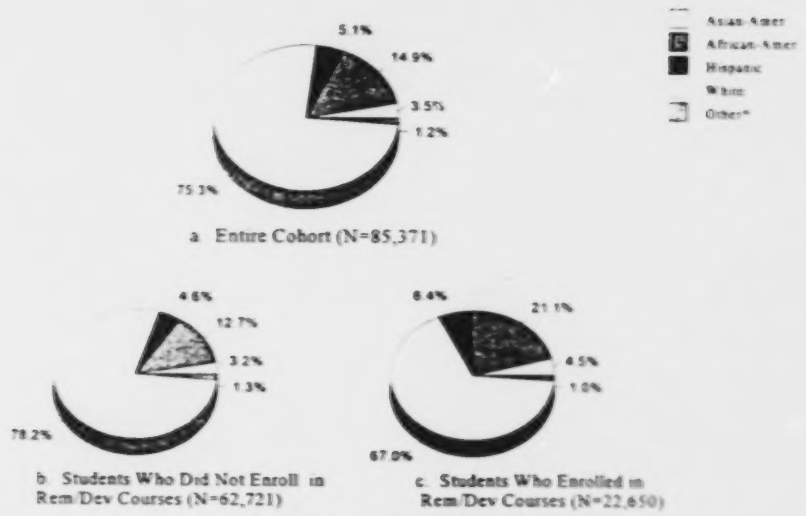


**Figure 2**. Ethnic Profile

The cohort studied is consistent with the two groups of students examined in part one of this study. Minorities tend to be overrepresented in the group of remedial/developmental coursetakers and white students are underrepresented, in comparison to the entire cohort and the group of students who did not enroll in remedial/developmental courses. Of particular note are African-American students, who account for only 14.9 percent of the entire cohort, but 21.1 percent of remedial/developmental coursetakers.

**Gender**. Males and females were similarly represented in the entire cohort, the group of remedial/developmental coursetakers, and the group of students who did seek remediation. As indicated in Figure 3, females were in the majority in all three groups.

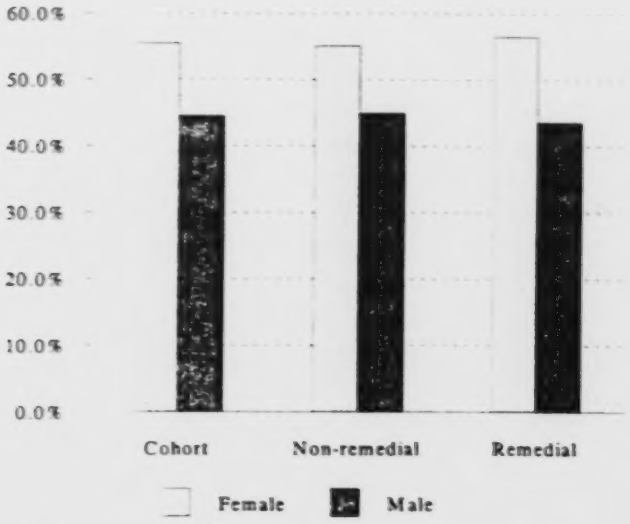


**Figure 3**. Gender

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**Comparison of Indicators of Educational Attainment for Remedial/Developmental Coursetakers and Students Who Did Not Enroll in Remedial/Developmental Courses**. Three general indicators of educational attainment were examined in the study: (1) cumulative grade point average, (2) a comparison of credit hours earned to credit hours attempted, and (3) rate of persistence. For purposes of this study, students were identified as persisters if during the period of the study they graduated, transferred to a university or another community college, or were still attending the community college where they originally enrolled at the end of the study period.

Cumulative Grade Point Average. An analysis of the cumulative grade point average (GPA) for remedial/developmental coursetakers and for students who did not enroll in remedial/developmental courses yielded positive information.

The cumulative GPA for remedial/developmental coursetakers was 2.42 (on a 4-point scale), compared to 2.84 for students who did not enroll in remedial/developmental courses. That represents a difference of less than one-half of a grade point. In addition, the GPA for both groups of students was well within the range considered to indicate good academic standing. It should be noted, however, that not all colleges reported information on grade point averages during the period of this study, so the data used were incomplete.

Credit Hours Earned Compared to Credit Hours Attempted. Comparing the number of credit hours earned to the number attempted gives an indication of whether or not students are successful in completing courses they attempt. While there may be a number of reasons that students fail to complete courses for which they enroll, not all of which relate to academic difficulty, this still represents a reasonable measure of educational attainment. Results of this study indicate that students who did not enroll in remedial/developmental courses earned credit hours attempted at a slightly higher rate (83.3 percent) than remedial/developmental coursetakers (78.9 percent).

Persistence Rates. A little over one-third (37.6 percent) of nonremedial/developmental coursetakers in the cohort were identified as persisters, according to the definition given above, compared to 45.0 percent of remedial/developmental coursetakers.

When the data are broken down into the four categories included in the definition of persistence, the profiles for persisters who did not enroll in remedial/developmental courses and those who did so were quite similar, as illustrated in Figure 4 on the following page.

The major difference between the two groups is in the proportion of students who were still attending the college at the end of the period studied -- 3.9 percent for students who did not seek remediation, and 9.3 percent for students who enrolled in remedial/developmental courses. This provides another indication that the need for remediation does have a negative impact on time-to-degree.

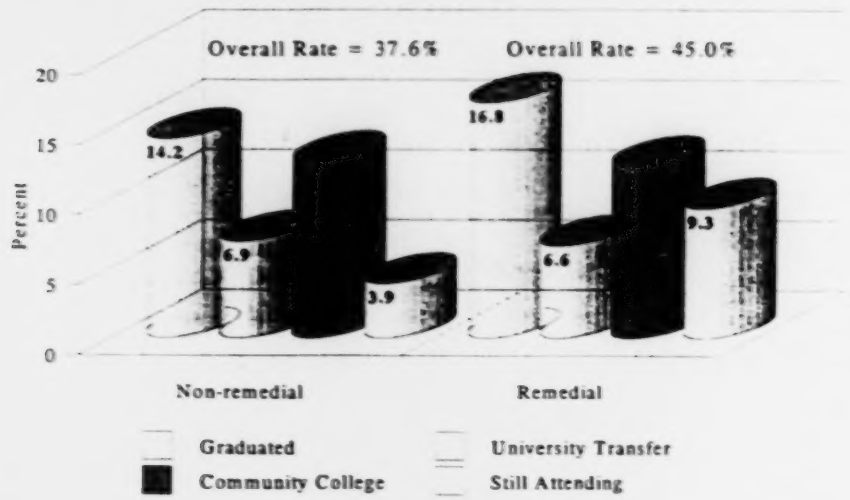


**Figure 4**. Persistence by Type

**Analysis of Remedial/Developmental Coursetakers Within the Cohort**. To provide further information regarding the effectiveness of remedial/developmental instruction for students in the cohort, remedial/developmental coursetakers within the cohort were analyzed to determine if educational outcomes differed according to the amount and/or type of remediation, as well as if there were differences in levels of educational attainment evident by age, ethnicity, or gender. Students who earned all remedial/developmental credit hours attempted were compared to those who did not do so.

Rate of Persistence. Overall, 45.0 percent of all students in the cohort who enrolled in one or more remedial/developmental courses were identified as persisters. However, there were differences in rates of persistence within that group, as illustrated in Figures 5a and b.

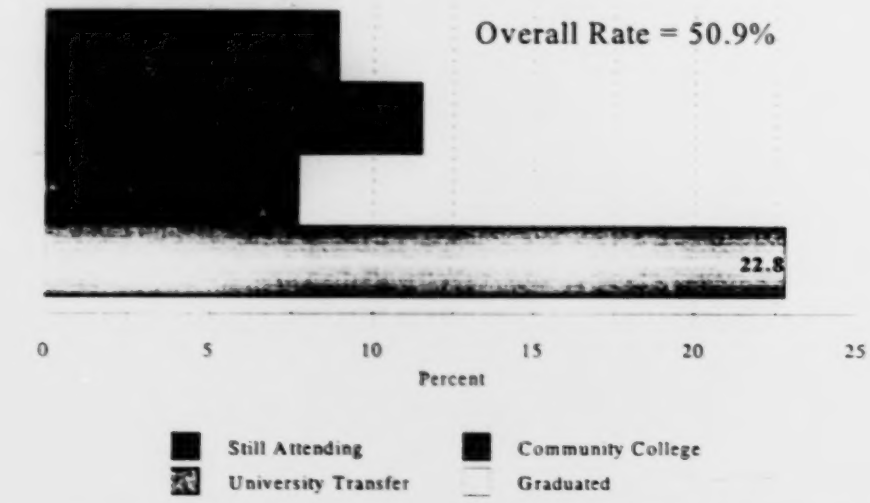


**Figure 5a**. Persistence by Type for Students Who Earned All Remedial Hours Attempted

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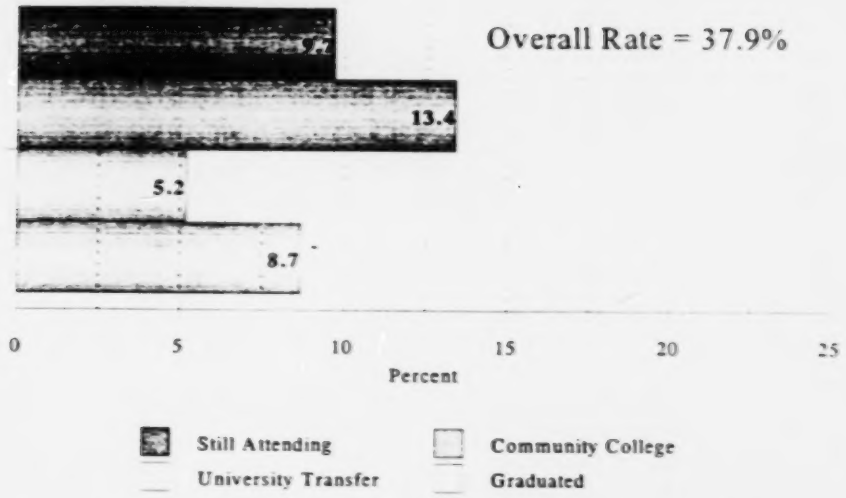


**Figure 5b**. Persistence by Type for Students Who Did Not Earn All Remedial Hours Attempted

A total of 13,032 students earned all the remedial/developmental credit hours they attempted, and 6,639 (50.9 percent) of those students were persisters. In comparison, 9,618 students did not earn all of the remedial/developmental credit hours they attempted, and only 3,555 (37.0 percent) of those students were persisters. The persistence rate for students who successfully completed remediation exceeded the 37.6 percent rate for nonremedial/developmental coursetakers. In addition, successful remedial/developmental coursetakers were more likely to graduate (44.7 percent) than those who did not complete remedial/developmental courses attempted (23.4 percent). Persisters who did not successfully complete all remedial/developmental courses attempted were more likely to transfer to another community college or still be in attendance at the college where they originally enrolled. This may indicate that time-to-degree for this group of students is extended due to the need to repeat some remedial/developmental courses.

Figure 6 shows the persistence rate by age for students in the cohort who enrolled in remedial/developmental courses. The categories of less than 18 years old, over 55 years old, and unknown were excluded from this analysis since the numbers in each category were too small for meaningful analysis.

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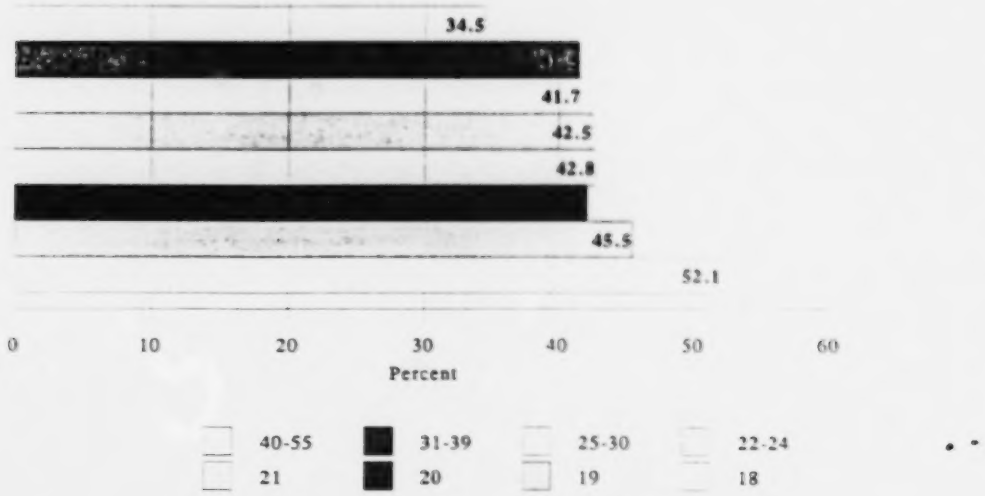


**Figure 6**. Persistence Rate by Age for Students Who Enrolled in Remedial/Developmental Courses (N=22,650)

Generally, the rate of persistence for students who enrolled in remedial/developmental courses decreased as age increased. For all age groups except 40-55 year-olds, the rate of persistence was higher than for students who did not enroll in remedial/developmental courses. However, as Figure 7 indicates, within age ranges, students who successfully completed all remedial/developmental courses attempted persisted at higher rates than those who did not, and in all age ranges, their rate of persistence exceeded that of students who did not enroll in remedial/developmental courses.

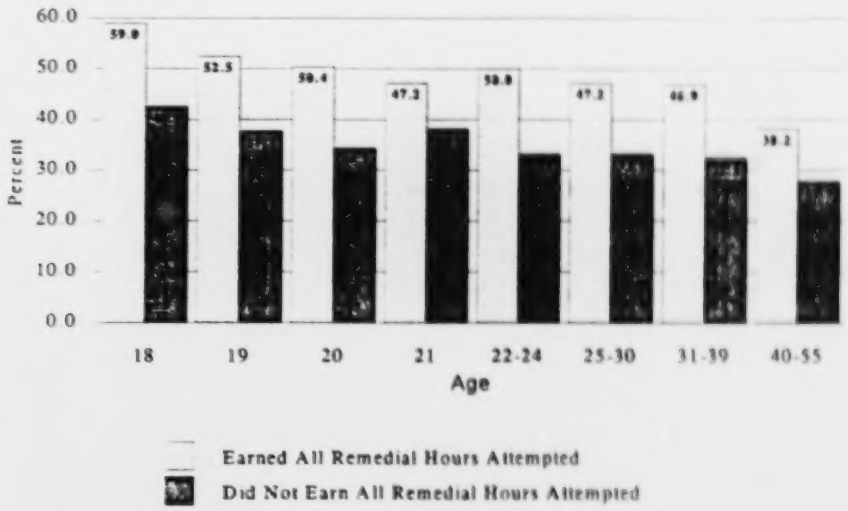


**Figure 7.** Persistence by Age and Remedial Hours Earned

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By ethnicity, persistence rates for remedial/developmental coursetakers compared favorably to the rates for students who did not enroll in remedial/developmental courses (see Figure 8). American-Indians, nonresident aliens, and unknown were not included in this analysis, since the numbers were too small to lead to meaningful analysis.

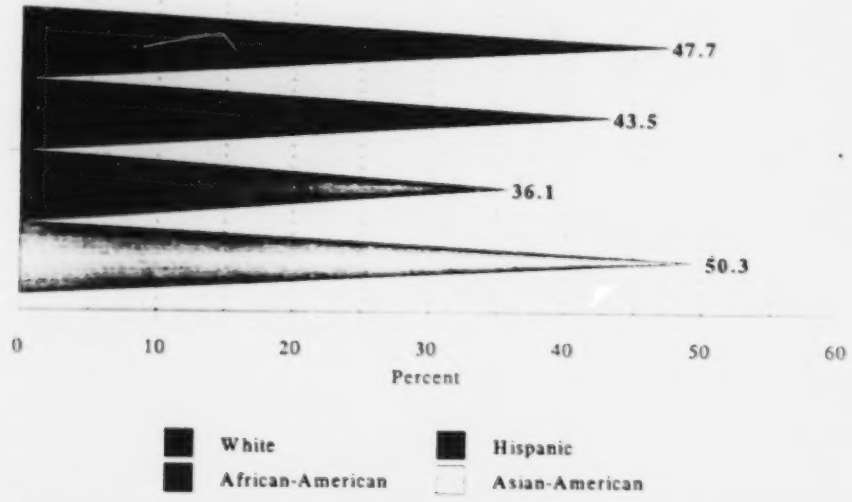


**Figure 8.** Persistence by Ethnicity for Remedial/Developmental Coursetakers.

When examined by ethnicity, persistence rates for those who successfully completed all remedial courses attempted were higher than for those students who did not complete all remedial/ developmental courses in all cases (see Figure 9).

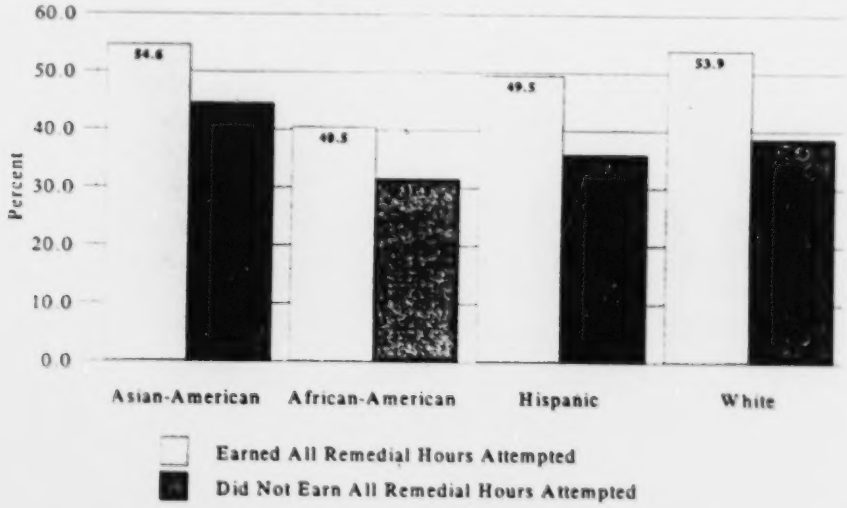


**Figure 9.** Persistence by Ethnicity and Remedial Hours Earned

By gender, 41.0 percent of the remedial/developmental coursetakers who persisted throughout the course of the study (N=10,194) were male and 59.0 percent were female. As illustrated in Figure 10, when persisters who successfully completed all remedial/developmental courses attempted (N=6,639) were compared to those who persisted but did not successfully complete all remedial/developmental courses attempted (N=3,555), females were in the majority in both cases. In addition, in comparison to the composition of the entire group of remedial/developmental persisters, females were slightly overrepresented in the group of students who successfully completed all remedial/developmental courses attempted, while males were slightly overrepresented in the group that did not do so.

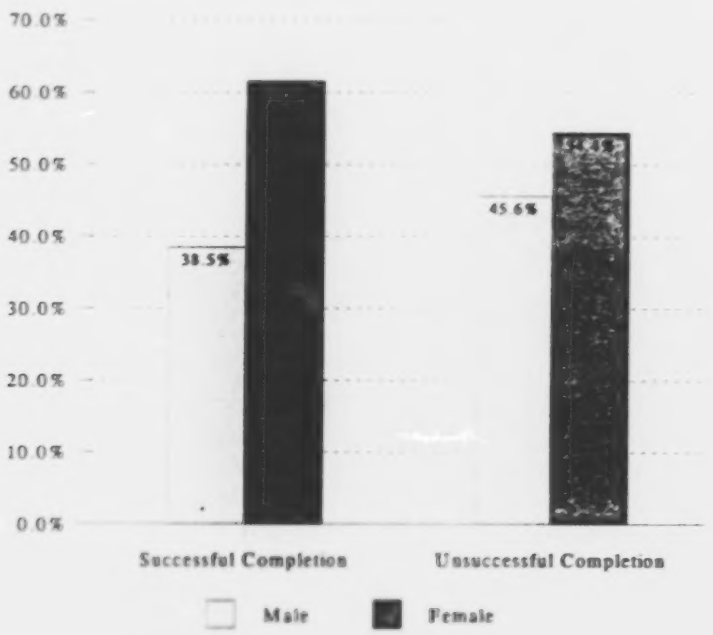


**Figure 10.** Persistence by Gender

To summarize, for the cohort studied, successful completion of remedial/developmental courses appeared to have a positive correlation to persistence rates for remedial/developmental coursetakers as a group, by age, by ethnicity, and by gender. Additionally, persistence rates for successful remedial/developmental coursetakers exceeded rates for students who did not enroll in any remedial/developmental courses.

Amount of Remediation. Table 1 displays the number of remedial/developmental credit hours (within ranges) that students attempted and earned.

Of all students who enrolled in remedial/developmental coursework, 7,728, or 34.1 percent, were in the 0-3 credit hour range (the equivalent of one course); 7,050, or 31.1 percent, were in the 4-6 credit hour range (two courses); and 3,620, or 16.0 percent, were in the 7-9 credit hour range (three courses). Therefore, 78.2 percent, or nearly eight of ten students who enrolled in remedial/developmental courses attempted three or fewer courses, and 62.2 percent, or nearly two of every three students attempted only one or two remedial/developmental courses.

Table 1
Percent of Students Earning all Remedial Hours Attempted

| Hours Range | Hours Attempted | Hours Earned | % Earned |
|---|---|---|---|
| 0 - 9 | 18,398 | 11,815 | 64.2% |
| 10 - 18 | 3,293 | 995 | 30.2% |
| 19 or more | 960 | 222 | 23.1% |
| Total | 22,650 | 13,032 | 57.5% |

SOURCE OF DATA: Annual Enrollment Records

When we look at the rate at which remedial/developmental coursetakers successfully completed all remedial/developmental credit hours they attempted, there are three distinct clusters. In the 0-9 credit hour range (1 to 3 courses), 64.2 percent of the students successfully completed all credit hours attempted. In the 10-18 hour range (4 to 6 courses), the successful completion rate dropped to 30.2 percent, and above that (7 or more courses), the rate fell even lower to 23.1 percent. This bears out other research findings cited earlier in this report that indicate that students who require more than three remedial/developmental courses are at serious academic risk. It is positive to note that the vast majority of students in the study enrolled for three or fewer remedial/developmental courses and that their rate of successful course completion was at least two times higher than students who enrolled in more than three remedial/developmental courses.

Type of Remediation. The literature indicates that students' academic preparation tends to follow a hierarchial order: most prepared in reading, better prepared in writing, and least prepared in mathematics (SREB, 1991). The cohort studied appeared to follow that order of academic preparation. The students enrolled in remedial/developmental courses were distributed by subject as displayed in Figure 11.

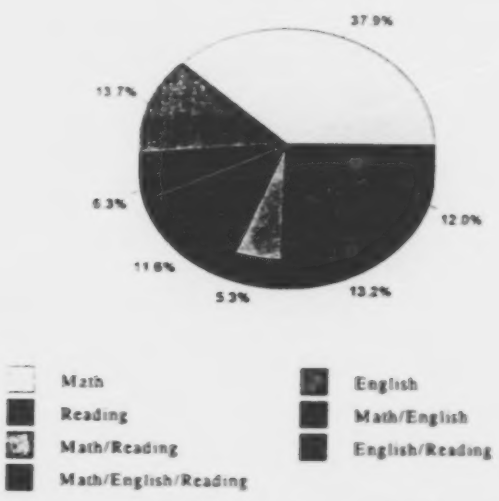


**Figure 11.** Distribution of Remedial/Development Coursetakers by Subject

This distribution is consistent with part one of this study, in that mathematics is clearly the subject in which the highest number of students sought remediation. Figure 12 indicates the successful course completion rate for students by subject area.

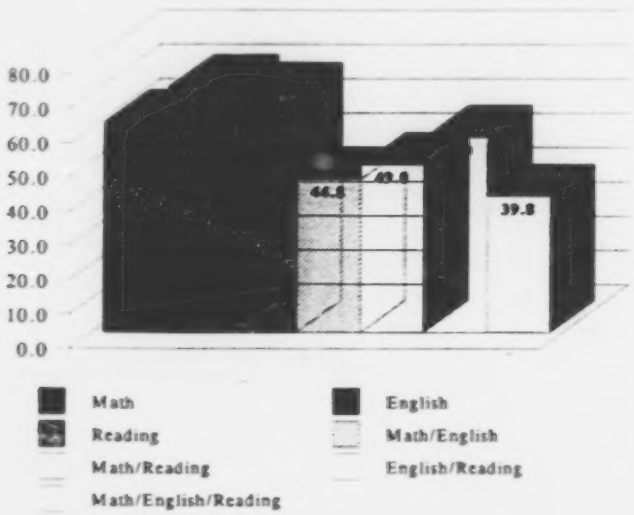


**Figure 12.** Course Completion by Subject

Students who sought remediation in a single subject area were the most successful in course completion. These were also the three areas in which the highest number of students attempted 0-3 credit hours, or one course. Students who enrolled in remedial/developmental courses in two subject areas tended to enroll for 4-6 or 7-9 credit hours, or two or three courses. For students who attempted remediation in all three subject areas, it was most common to enroll for between 7 and 15 credit hours, or from three to five courses. As noted earlier in this report, completion rates for remedial/developmental courses declined as the number of credit hours attempted increased, confirming findings of previous studies that students who require extensive remediation are seriously at academic risk.

By age, coursetaking patterns were similar for the various age groups. However, in general, the rate of successful course completion for students 25 years of age and older were comparable to or higher than the rates for younger students in all subject areas, most notably for those who took courses in all three subject areas. Also of note, recent high school graduates (ages 18-21) who enrolled in remedial/developmental courses in only one subject area were most likely to do so in mathematics. The successful completion rates in remedial/developmental mathematics courses ranged from 59.2 percent for 18-year-olds to 55.2 percent for 20-year-olds. In contrast, successful completion rates for students in the older age groups ranged from 67.1 percent for students age 25 to 30 to 70.9 percent for students age 31 to 39. This indicates that, for students who require remediation in only one subject area, the need to repeat remedial/developmental mathematics courses may have a greater effect on time-to-degree for recent high school graduates than for older students.

The study also revealed that minority students attempted remediation in language-related subjects (English and reading) and in all three subject areas at higher rates than white students. For example,

approximately one in five Asian-American students earned all remedial/developmental credit hours in English and reading, compared to about one in ten African-American and Hispanic students, and about one in twenty white students.

Gender. As indicated in Table 2, remedial/developmental coursetaking patterns were similar for males and females who successfully completed all courses attempted, as well as for those who did not do so. For both groups, there were some slight differences by gender. For example, females were more likely to seek remediation in mathematics, while males were more likely to enroll in remedial/developmental English.

Table 2
Remedial Developmental Coursetaking Patterns by Gender

| | Math | English | Reading | Math English | Math Reading | English Reading | Math English Reading |
|---|---|---|---|---|---|---|---|
| **MALE** | | | | | | | |
| Successful | 37.7% | 20.2% | 7.6% | 9.7% | 4.1% | 13.5% | 7.2% |
| Unsuccessful | 32.6% | 10.4% | 4.8% | 16.2% | 5.8% | 14.3% | 15.9% |
| **FEMALE** | | | | | | | |
| Successful | 42.3% | 15.0% | 7.4% | 8.7% | 4.8% | 12.8% | 9.0% |
| Unsuccessful | 36.2% | 8.1% | 4.2% | 14.2% | 6.9% | 12.4% | 18.0% |

When coursetaking patterns for students who successfully completed all remedial/developmental courses attempted were compared to patterns for those who were not successful in all courses, there was little difference by gender, but the patterns for the two groups were quite different. For students of both genders in the successful course completion group, almost two-thirds sought remediation in only one subject area, a little over one-fourth enrolled in courses in two subjects, and slightly less than one-tenth enrolled in courses in all three remedial/developmental subject areas. For students of both genders who did not successfully complete all remedial/developmental courses attempted, nearly one-half enrolled in courses in only one subject area, one-third enrolled in courses in two subject areas, and about one-sixth enrolled in all three subject areas. The difference in coursetaking patterns in relation to student success in course completion correlates to previous research findings that students who require remediation in multiple subjects are generally less successful than those who require remediation in only one subject.

In summary, the analysis of data for the cohort studied indicates that successful completion of remedial/developmental courses appears to have had a positive effect on educational outcomes. In terms of cumulative grade point average, ratio of credit hours attempted to credit hours earned, and persistence, students who enrolled in one or more remedial/developmental courses compared favorably to students who did not seek remediation. In addition, within the group of students who enrolled for remedial/developmental coursework, those who successfully completed all courses attempted had higher persistence rates and were more likely to graduate than those who did not do so. It is also positive to note that the vast majority of students who enrolled in remedial/developmental courses appeared to need remediation in only one subject area and enrolled in three or less courses in that subject. According to the literature, these students are least likely of all students in need of remediation to be at serious academic risk. The cohort studied bears this out. However, some of the results of the study are of concern. Younger students appear to be less successful in completing remediation, particularly in mathematics, than older students. Minority students and younger students are overrepresented among remedial/developmental coursetakers.

Minority students also seek remediation in language-related courses in higher proportions than white students. Since language-related skills are foundational to academic performance, these students may be at high academic risk.

**Characteristics of Effective Remedial/Developmental Programs**

The results of the foregoing cohort analysis provide an indication that for students who lack the basic academic skills to perform college-level work, remedial/developmental instruction has a positive effect on academic outcomes. The literature also provides evidence from studies of remedial/developmental programs in a wide array of institutional settings that certain characteristics are commonly associated with effective remedial/developmental programs, including early intervention (Kulik, Kulik & Schwalb, 1983), required entry-level testing, mandatory basic skills course placement, and strong ties between basic skills courses with subsequent college-level courses (Roueche, Baker & Roueche, 1984), and a full-time director with dedicated staff who are given opportunities for additional training (Ross & Roe, 1986). Selected results of the ICCB survey conducted in conjunction with part one of this study provided information about community college policies related to some of the above characteristics of effective remedial/developmental programs as follows:

- Assessment of basic skills is mandatory for selected students at all Illinois community colleges. The most frequently mentioned student groups required to undergo placement testing are those entering college-level mathematics or English courses and those enrolling on a full-time basis.

- Nearly three-quarters of the colleges indicated that remedial/developmental instruction is integrated into the academic departments.

- Faculty and staff that teach in remedial/developmental programs typically are part-time college employees.

- Just over three-quarters of the colleges indicated that they track student progress from remedial/developmental courses into college-level programs.

Clearly, Illinois community colleges are responding to the needs of students who require remediation. Given the uniqueness of each college and the student population each serves, it is expected that polices related to remedial/developmental instruction and the structure of the programs through which the instruction is delivered will vary among institutions. However, there are some basic policies and program characteristics, such as those enumerated above, that have been found to apply across the spectrum of institutional settings. The jointly developed IBHE/ICCB report on remedial/developmental education (September 1997) and part one of this study included suggested implementation strategies for several existing statewide policies related to remedial education, particularly at community colleges. The policy statements addressed are listed below:

- Assessing student performance at appropriate intervals is an important part of the community college system's accountability initiative and Illinois Board of Higher Education's initiative to improve undergraduate education.

- Statewide policies on affordability urge colleges to facilitate the academic progress of students enrolled in remedial programs.

- Community colleges are encouraged to assist in improving the preparation of students by informing potential students, parents, and schools of expectations for adequate academic preparation.

The suggested implementation strategies related to each of these policies are included as Appendix A of this report. The results of this cohort study provide evidence that remedial/developmental instruction is effective in enhancing educational outcomes for students who need to sharpen their basic academic skills, and reaffirms the importance of these policies and implementation strategies. **It is strongly recommended that community colleges review policies and practices related to remedial/developmental instruction and incorporate the implementation strategies described in Appendix A of this report as appropriate.**

Finally, it is important to note the limitations of this cohort study. The ICCB administrative databases contain information reported by the colleges for students who enrolled in courses during a given academic term. What is not included in the databases is information regarding students who were recommended for remediation based on placement test results, but who did not follow the recommendations. In addition, many colleges allow students to enroll in remedial/developmental courses even though test results may not indicate the need to do so. Therefore, within the cohort studied, there may be students who did not enroll in remedial/developmental courses even though the need for remediation was indicated. Likewise, there may be students who chose to enroll in remedial/developmental coursework, even though placement test scores did not indicate the need to do so.

The community colleges maintain more specific information on student coursetaking patterns and educational outcomes and are able to answer additional questions regarding the effectiveness of remedial/developmental education. The first part of this study highlighted studies that have been conducted at the College of Lake County, Moraine Valley Community College, the City Colleges of Chicago, Parkland College, John A. Logan College, and Rock Valley College. Individual college studies were able to look at more specific aspects of the impact of remedial/developmental education, including comparisons of outcomes for students who completed recommended remediation to those who did not, the relationship between successful remedial/developmental course completion and subsequent related college-level course completion by level and type of remediation, and how remediation affects students' performance in core courses as compared to students that did not require remediation. Information from these studies documented the effectiveness of remedial/developmental education and also provided direction to the colleges regarding the development of policies and program structure that may improve the academic success experienced by students who require remediation. For example, results of the study conducted at the College of Lake County led to the following recommendations: students should be required to take necessary remediation; students should not delay taking remedial/developmental courses; and students who have skill deficiencies in two or three basic academic skill areas (reading, writing, and mathematics) should be required to focus on developmental education before beginning college-level coursework (Weissman, Silk, & Bulakowski, 1997). There is a clear need for colleges to regularly evaluate the educational attainment of students who require remediation to validate and/or improve policies and program structures in order to maximize student success.

Part One of this study asked community colleges to consider the following issues:

1. **Mechanisms to collect information about the number of students whose placement test results show a need for remediation who decide not to take the courses or not to enroll at all at the college should be explored.**

2. **Additional study needs to be conducted on students whose entrance exams indicate the need for remedial/developmental work and opt not to take the recommended courses.**

3. **Full- and part-time staffing patterns in remedial/developmental education need to be examined to determine if there is an appropriate mix of full- and part-time staff, if a core of full-time faculty is available to work on curricular issues and coordinate the delivery of instructional services, and whether sufficient opportunities for professional development and special training are provided for part-time faculty who staff remedial/developmental programs.**

The issues are repeated here to emphasize their importance in ensuring that programs of remedial/developmental instruction are optimally effective. Colleges will be asked to address the first two issues as part of the PQP/Program Review process for fiscal year 1998.

## Summary and Conclusions

This report, the second of a two-part study of remedial/developmental education in the Illinois public community college system, examined the outcomes of remedial/developmental education for a selected cohort of first-time freshmen over a six-year period. Remedial/developmental education has particular significance for Illinois community colleges, since according to state statute (P.A. 81-803) and Board of Higher Education policies on undergraduate education (1986), community colleges have been designated as the primary providers of remedial/developmental education in the state. Accordingly, a recent study entitled, *The Scope and Effectiveness of Remedial/Developmental Education in Illinois Public Universities and Community Colleges* (September 1997), jointly prepared by the Illinois Board of Higher Education and the Illinois Community College Board, revealed that, during fiscal year 1996, community college students accounted for 88 percent of the students who enrolled in remedial/developmental coursework at an Illinois public institution of higher education and that community colleges accounted for 87.2 percent of direct faculty salary expenditures to provide remedial/developmental instruction.

For part two of the study, a fall 1990 cohort of first-time freshmen was examined over a period of six years to determine the educational outcomes of those students and to give some indication of the effectiveness of remedial/developmental instruction. The cohort studied included 85,371 students. Of these, 22,650 (26.5 percent of the cohort) enrolled in one or more remedial/developmental course during the period of the study. Student characteristics of age, ethnicity, and gender for the entire cohort were compared to the group of students who enrolled in remedial/developmental courses and the group of students who did not do so, with the following results:

- Slightly more than 60 percent of the students who enrolled in remedial/developmental courses were recent high school graduates (18-21 years old). This age group was overrepresented among remedial/developmental coursetakers.

- Minorities tended to be overrepresented among remedial/developmental coursetakers, and white students were underrepresented in that group. African-American students were the most overrepresented group among remedial/developmental coursetakers.

- Males and females were similarly represented in the entire cohort, the group of remedial/developmental coursetakers, and the group of students who did not seek remediation. Females were in the majority in all three groups.

Three general indicators of educational attainment were examined in the study: (1) cumulative grade point average, (2) a comparison of credit hours earned to credit hours attempted, and (3) rate of persistence. Persistence was defined as graduated, transferred to a university or another community college, or still in attendance at the original community college. Results were as follows:

- The cumulative grade point average for remedial/developmental coursetakers (2.42 on a 4-point scale) was less than one-half grade point lower than for students who did not enroll in remedial/developmental courses (2.84). Data for this measure were not available for all of the colleges.

- Students who did not enroll in remedial/developmental courses earned credit hours attempted at a slightly higher rate (83.3 percent) than remedial/developmental coursetakers (78.9 percent).

- The persistence rate for nonremedial/developmental coursetakers was 37.6 percent, compared to 45.0 percent for remedial/developmental coursetakers. By type of persistence, students who took remedial/developmental courses graduated at a slightly higher rate than students who took no remedial/developmental coursework. Remedial/developmental coursetakers were also more likely to still be in attendance at the original community college at the end of the study period.

Further comparisons were made between students who successfully completed all remedial/developmental credit hours attempted and those who did not do so. Results indicated:

- Persistence rates were higher for students who earned all remedial/developmental credit hours they attempted (50.9 percent) than for those students who did not (37.0 percent). Successful remedial/developmental coursetakers were more likely to graduate (44.7 percent) than those who did not complete all remediation attempted (23.4 percent).

- Nearly eight of ten students who enrolled in remedial/developmental courses attempted three or fewer courses, and nearly two of every three students attempted only one or two remedial/developmental courses. Students who enrolled in the equivalent of one to three remedial/developmental courses had a successful completion rate of 64.2 percent. For those who attempted four to six courses, the rate dropped to 30.2 percent, and for seven or more courses, the rate was only 23.1 percent.

- Mathematics was the subject in which the highest number of students sought remediation. Younger students were less likely to complete all remedial/developmental courses, particularly in mathematics.

- Minority students attempted courses in language-related subjects more often than white students, indicating that minority students may be more likely to be at serious academic risk due to deficiencies in these foundational skills.

The analysis of the data for the cohort indicates that remedial/developmental education appears to have had a positive effect on the educational outcomes for students who successfully completed remediation. However, concerns remain for students who require remediation in reading and/or English and for those who require remediation in all three subject areas.

When results of the survey included in part one of this study are compared with policies and practices associated with effective remedial/developmental programs as identified in the literature, it is clear that the colleges are responding to the needs of students for remediation. However, it is strongly suggested that all colleges review policies and practices related to remedial/developmental instruction and incorporate the implementation strategies included in part one of this study (and as Appendix A of this report) as appropriate.

Finally, this cohort study was limited to information on actual student coursetaking behavior contained in ICCB administrative databases. It does not address educational outcomes for students who were recommended for remediation, but chose not to enroll in the recommended courses. In addition, it is not possible to identify remedial/developmental coursetakers who self-selected into remedial instruction. Summaries of college studies included in part one of this report provide evidence that tracking student performance beyond remedial/developmental courses and tracking students who did not complete recommended remediation can provide valuable information and direction for the development of policies that can strengthen remedial/developmental instruction and optimize students' chances for academic success. This reemphasizes the need for colleges to address the following issues identified in part one of this report:

1. **Mechanisms for collecting information about the number of students whose placement test results show a need for remediation who decide not to take the courses or not to enroll at all at the college should be explored.**

2. **Additional study needs to be conducted on students whose entrance exams indicate the need for remedial/developmental work and opt to not take the recommended courses.**

3. **Full- and part-time staffing patterns in remedial/developmental education should be examined to determine if there is an appropriate mix of full- and part-time staff, if a core of full-time faculty is available to work on curricular issues and coordinate the delivery of instructional services, and whether sufficient opportunities are available for professional development and special training for part-time faculty who staff remedial/developmental programs.**

The colleges will be asked to address the first two issues as part of the PQP/Program Review process for fiscal year 1998.

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Appendix A

## IMPLEMENTATION STRATEGIES

## Implementation Strategies

This section of the report refers extensively to IBHE and ICCB jointly developed implementation strategies that appear in the IBHE September item on *The Scope and Effectiveness of Remedial/Developmental Education in Illinois Public Universities and Community Colleges*. Based upon the results of national research and the survey of remedial/developmental education in Illinois public universities and community colleges, implementation strategies are aimed at increasing the effectiveness of existing policies on remedial/developmental education. These strategies are intended to generate further dialogue within the higher education community.

**Assessing student performance at appropriate intervals is an important part of the community college system's accountability initiative and Illinois Board of Higher Education's initiative to improve undergraduate education.**

1. Assessment of entering students and monitoring the progress of those who need to remediate reading, writing, or math skills is expected. Community colleges assess entering students who meet locally specified criteria. Three-quarters of the community colleges track outcomes of remedial/developmental students.

2. If assessment results indicate that a student needs remedial/developmental instruction, college officials should strongly recommend that the student take these courses upon entry to the college. The research literature reveals that completion of a developmental education program is positively related to student persistence. Research also reveals that students who take recommended remedial/developmental courses upon first entering college are more successful than those who delay or avoid taking recommended remediation.

3. Institutions are asked to document and examine the characteristics of students who need remedial/developmental education, including their age, racial/ethnic characteristics, gender, number of remedial/developmental courses recommended and taken, and subject areas of remediation. National studies show patterns of markedly reduced persistence and success for students who need remediation in reading or who need to take three or more remedial/developmental courses (Adelman, 1996) An awareness of student characteristics can inform faculty and advisors in developing appropriate academic strategies. Institutional student information systems should be designed to answer questions about the eventual success of students who need remedial/developmental education. Colleges are encouraged to examine questions such as these: "Are students who take recommended remedial coursework in writing more likely to complete Freshman Composition and earn a grade of 'C' or better than those who don't take recommended remediation?" A few community college studies are referenced in this report that address this question but additional work in this area is needed.

4. Institutions are asked to document the need for remedial/developmental education among transfer students and provide feedback to the sending institutions. Institutions are asked to note skill levels among students who transfer with differing amounts of credits. In the community college system there is a need to look at reverse transfers who began their postsecondary studies at another college or university.

**Statewide policies on affordability urge colleges to facilitate the academic progress of students enrolled in remedial programs.**

1. Students who need remedial/developmental education in two or three subject areas should focus upon a program of developmental studies before attempting college-level courses. The research literature reveals that students who are underprepared in math only are the most successful at improving required skills, but those who need three or more remedial/developmental courses or who need to improve basic skills in more than one subject are at considerably greater risk of not succeeding in attaining their educational goals. (Adelman, 1996; Weissman, Silk & Bulakowski, 1997). These students should focus on improving basic skills, especially reading and writing, before enrolling in college-level courses. As students gain proficiency in basic skills, integrated coursework that provides further instruction in college-level skills as well as introductory material in specific subjects could be offered.

2. Institutions are encouraged to investigate using different approaches, methods, teaching strategies, and scheduling for remedial/developmental education for students in different age groups. Information from national databases reveals that almost half of the students who take remedial/developmental courses are five or more years beyond the traditional age of high school graduation at 18. Similarly, information from ICCB administrative databases reveal that in fiscal year 1996 students 22 years of age and above accounted for 48.9 percent of the remedial/developmental students. For example, colleges and universities could consider short, "refresher workshops" for returning adults who simply need several weeks of intensive review before or during the start of the regular semester to review math fundamentals or expository writing principles.

**Community colleges are encouraged to assist in improving the preparation of students by informing potential students, parents, and schools of expectations for adequate academic preparation.**

1. Community colleges have been asked to provide useful feedback to high schools about the preparation of their graduates for college. The staffs of the Illinois Community College Board and the Illinois Board of Higher Education should renew efforts to provide useful feedback to high schools about the progress of their graduates and review the kind of information currently provided to high schools to ensure that this information is useful. Staffs should consider providing regional workshops that involve faculty and staff from high schools, community colleges, and four-year institutions to solicit feedback on what works and what is not effective in the current system.

2. As the Illinois State Board of Education (K-12) revises assessment of what students learn in high school, the higher education community should work with the Illinois State Board of Education to build college admission requirements into the new Illinois Learning Standards. The new Illinois Learning Standards adopted by the Illinois State Board of Education will provide high schools, students, and parents with specific learning goals and objectives in seven fundamental areas. The Illinois State Board of Education will begin the process of implementing these Standards this fall, which, at a minimum, will mean aligning

the curriculum, teacher knowledge and skills in each school with the new Standards; identifying and responding to problems in meeting the learning targets; and communicating in new ways with students, parents, and Illinois communities. The State Board intends to publish copies of the Standards for every Illinois teacher and administrator and plans a special publication for parents. Other states, notably Oklahoma, have documented a reduction in the need for remediation due to similar initiatives.

3. As the Illinois State Board of Education (K-12) implements the new Learning Standards, the higher education community should assist in efforts to promote early warning systems that link high schools and colleges. Ohio's Early English Composition Assessment Program is an example of an early warning program that has been successful in promoting faculty development between high school and two- and four-year college faculty to identify student writing strengths and weaknesses in relation to the standards expected of college freshman English. The program helps high school students, freshmen through seniors, to meet college writing standards, thus influencing high school students early enough in their educational careers to make a difference.

4. Community colleges are encouraged to work with area high schools to resolve issues surrounding the need for remediation among recent high school graduates. Community colleges serve defined service regions of the state. Colleges should continue their efforts to work with area high schools in instances where patterns emerge of recent graduates arriving at the college underprepared in specific academic subjects.

**Community colleges are also asked to consider the following issues which arose from the examination of information generated from the survey and an analysis of ICCB administrative databases:**

1. Data contained in this report are for students who actually enrolled and took remedial/developmental courses at the colleges. As noted in the report, some colleges do not require students to take remedial courses even though test results indicate that enrollment would be beneficial. Additionally, some prospective students who complete entrance placement testing decide not to enroll at the college. Mechanisms for collecting information about the number of students whose placement test results show a need for remediation who decide not take the courses or not to enroll at all at the college should be explored.

2. Additional study needs to be conducted on students whose entrance exams indicate the need for remedial/developmental work and opt to not take the recommended courses.

3. Colleges are asked to examine the full- and part-time staffing patterns in remedial developmental education. How do they compare to other areas of the college? To what extent have colleges attained an appropriate mix of full and part-time staff? Is there a core of full-time faculty available to work on curricular issues (scope, sequence, structure, etc.) and coordinate the delivery of instructional services? Are sufficient opportunities for professional development and special training available for part-time faculty who staff remedial/developmental programs?